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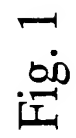


Fig. 1

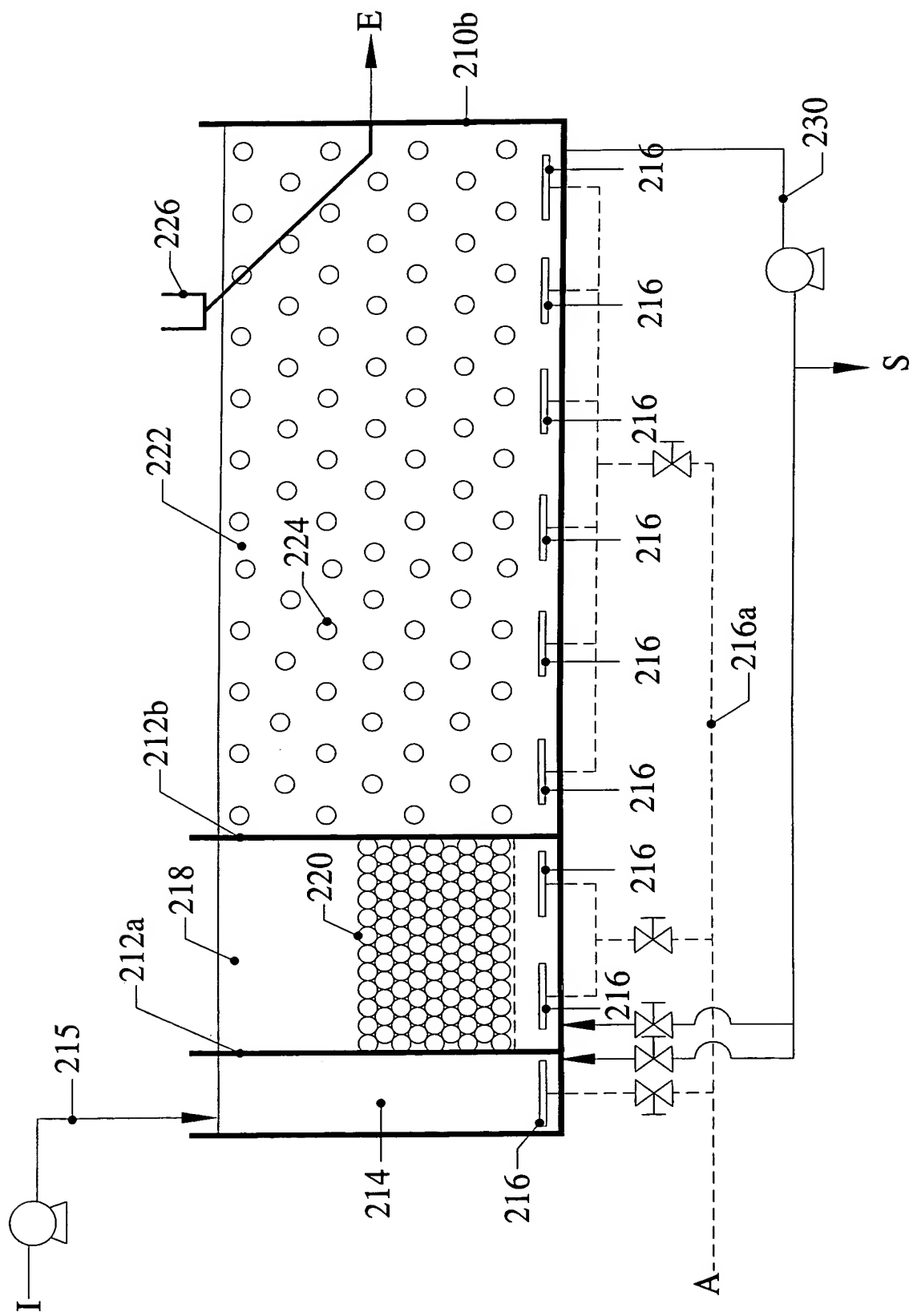


Fig. 2

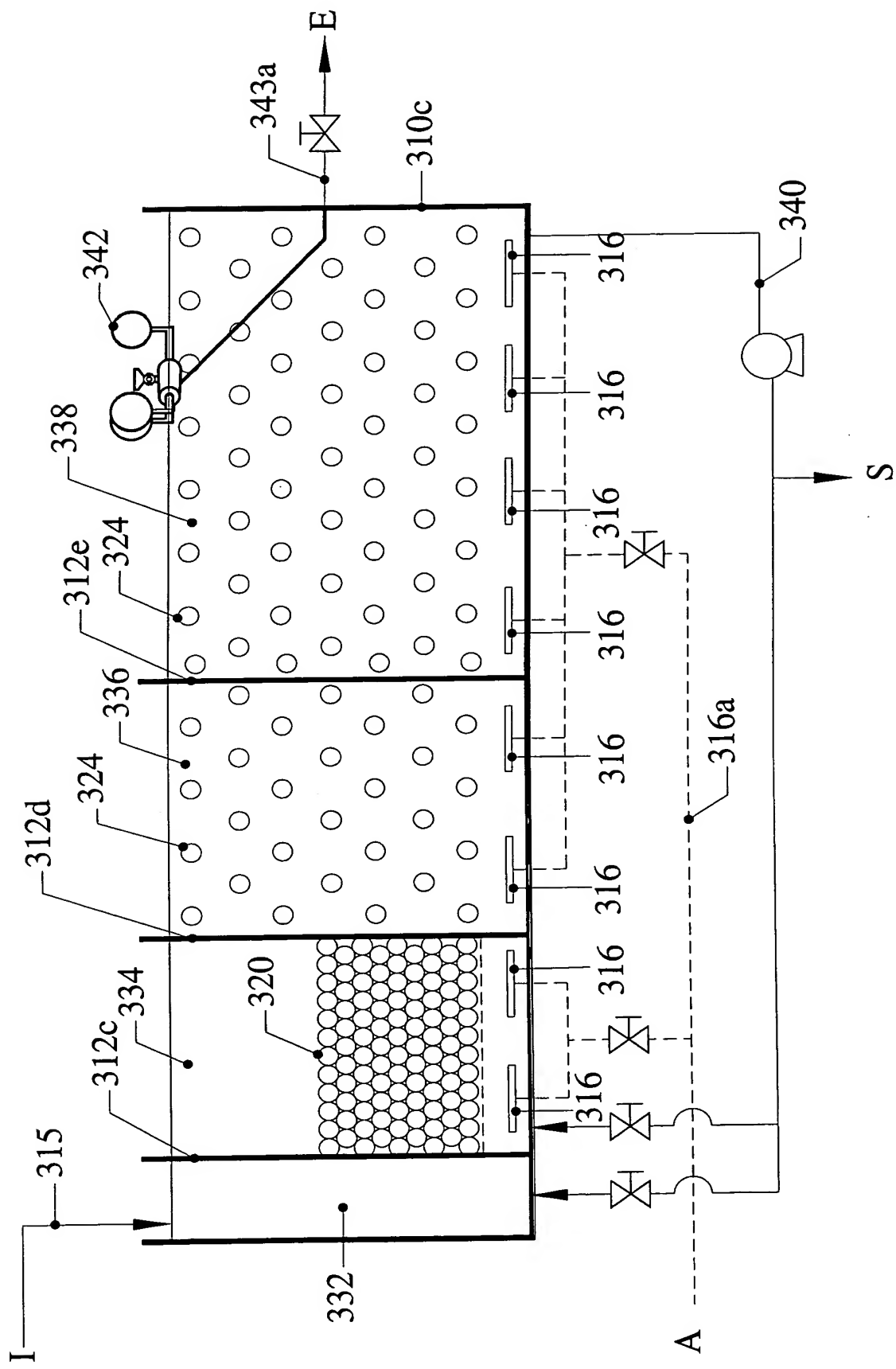


Fig. 3

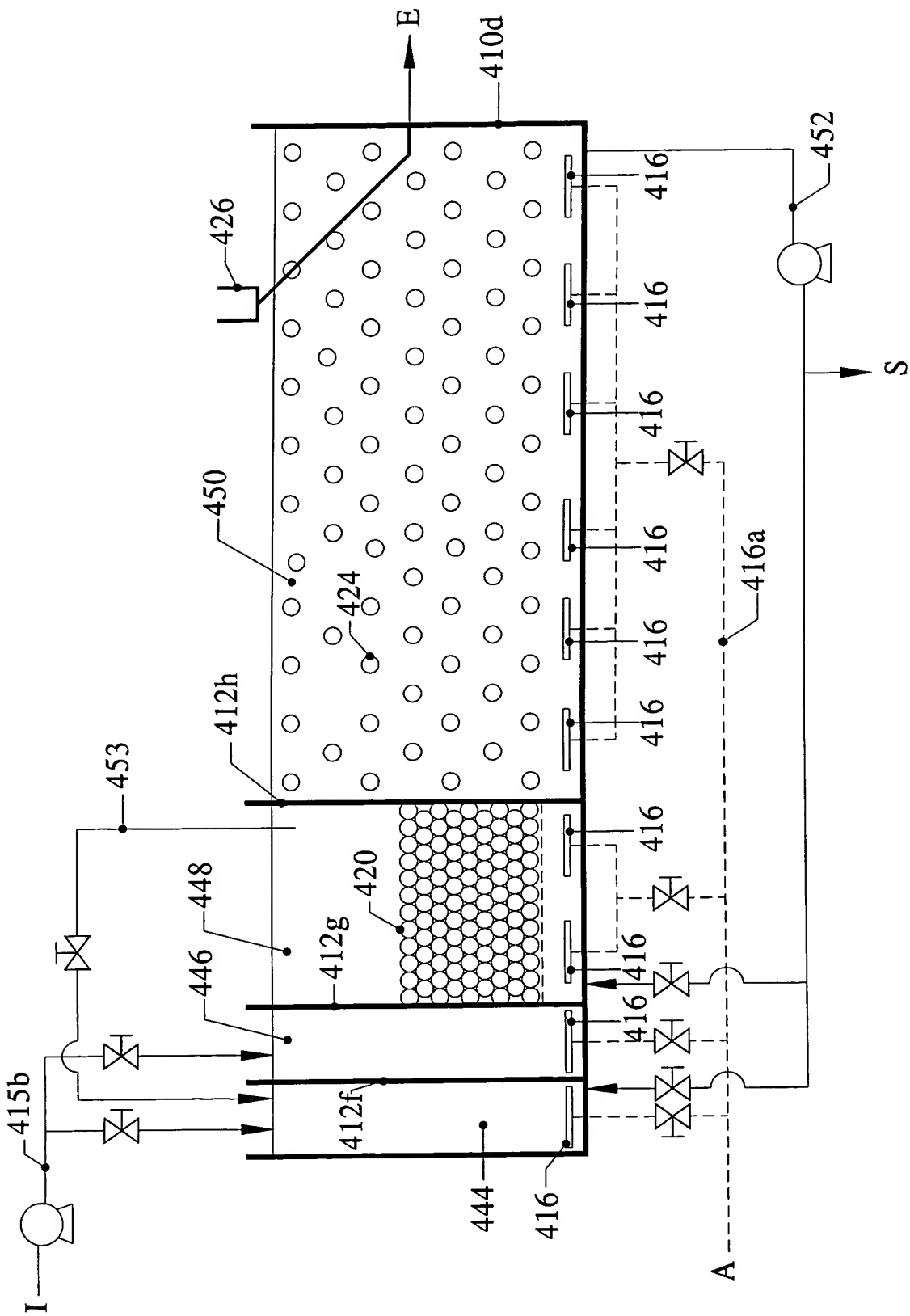


Fig. 4

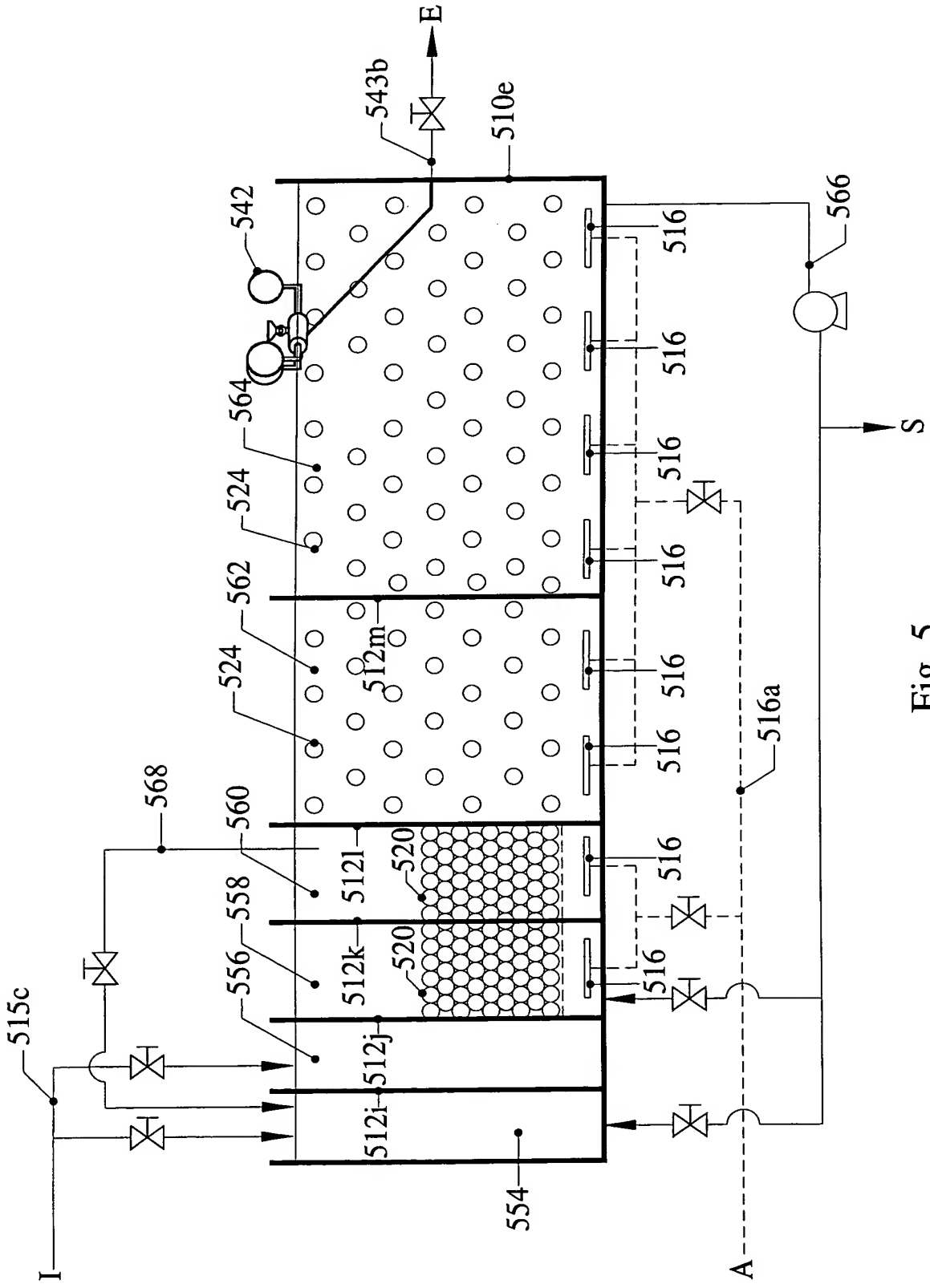


Fig. 5

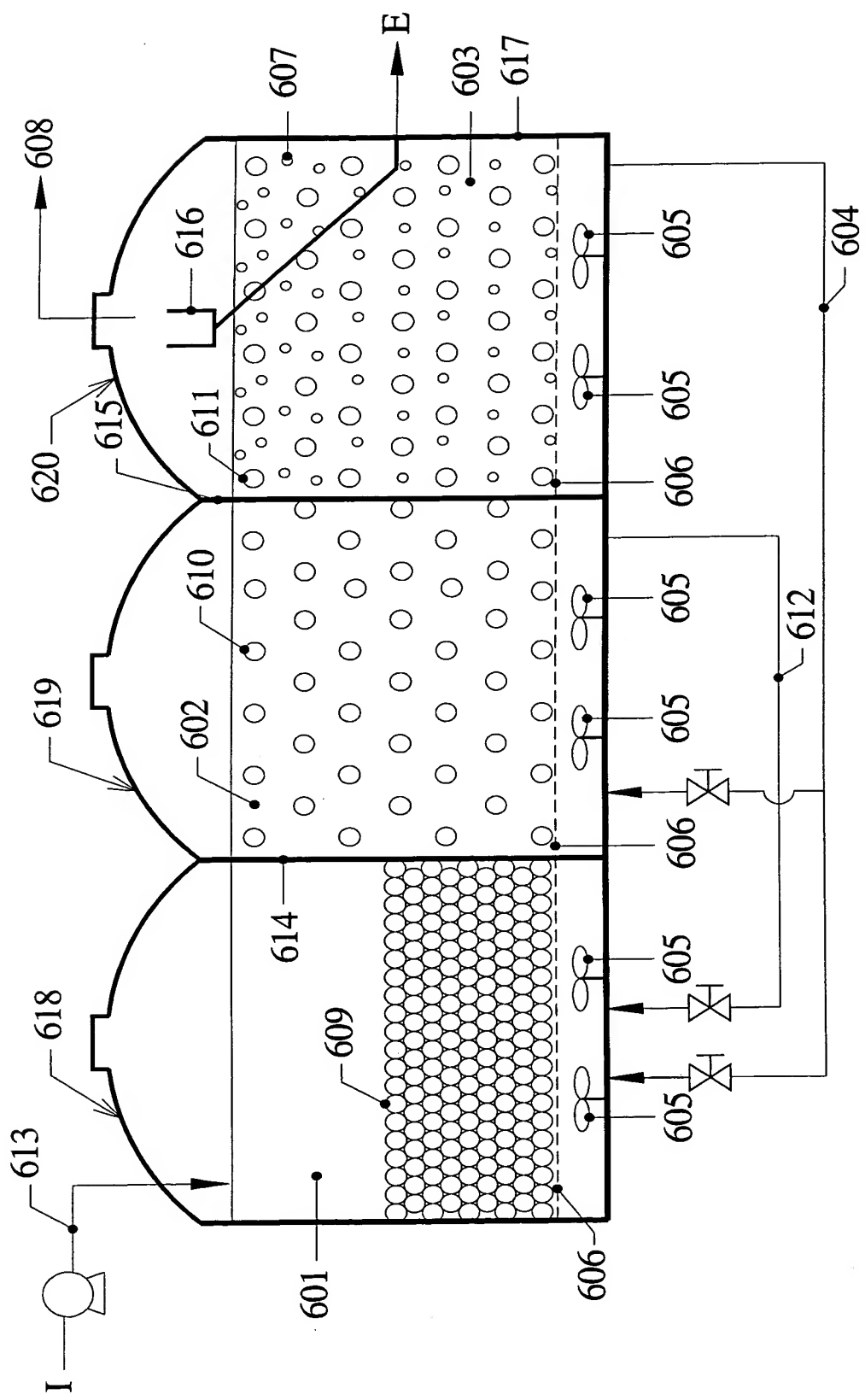


Fig. 6

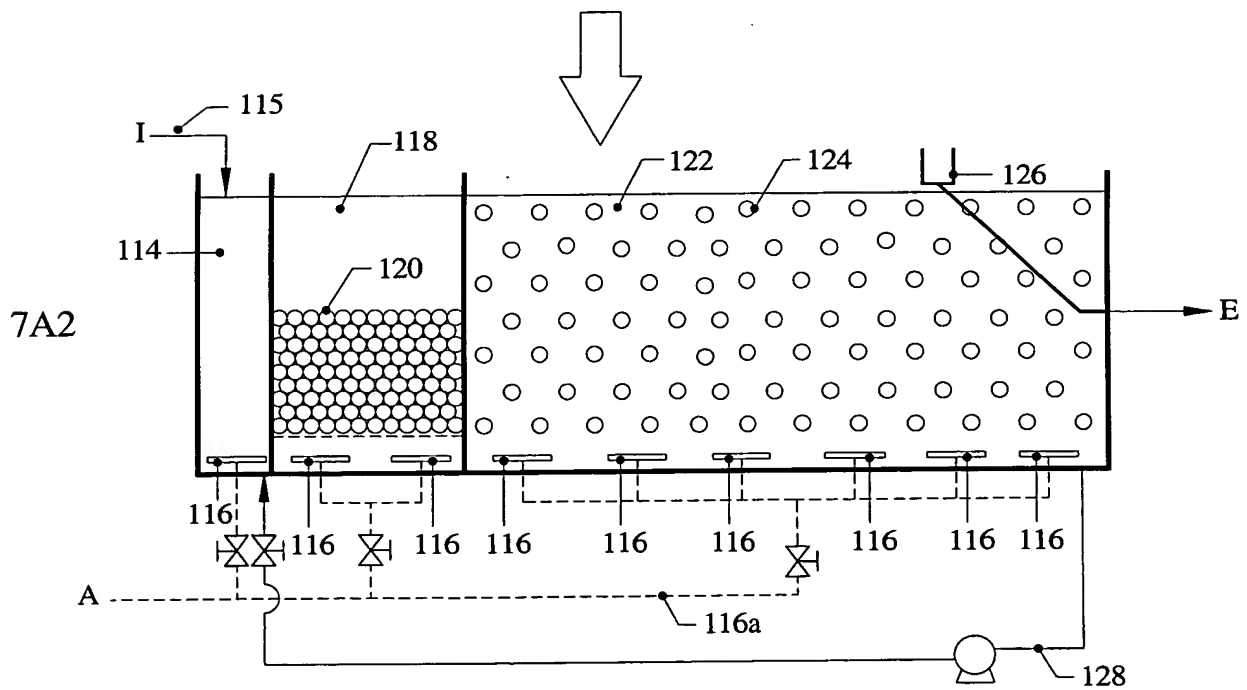
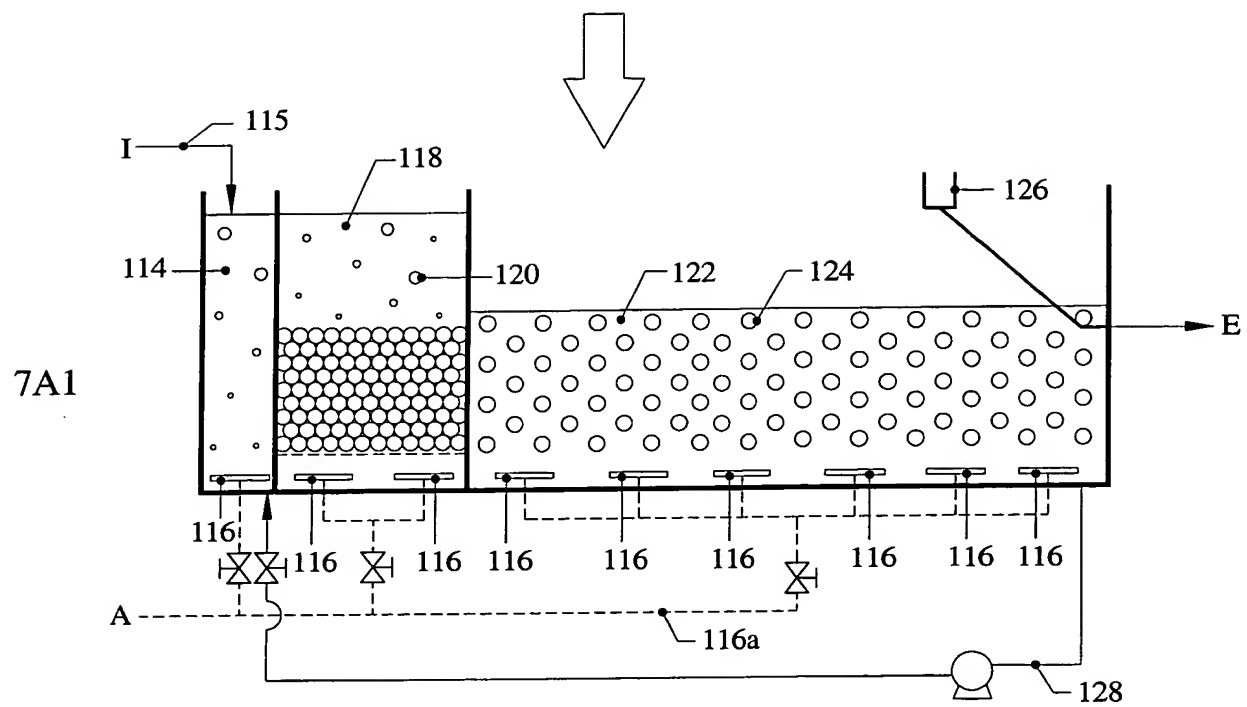


Fig. 7A



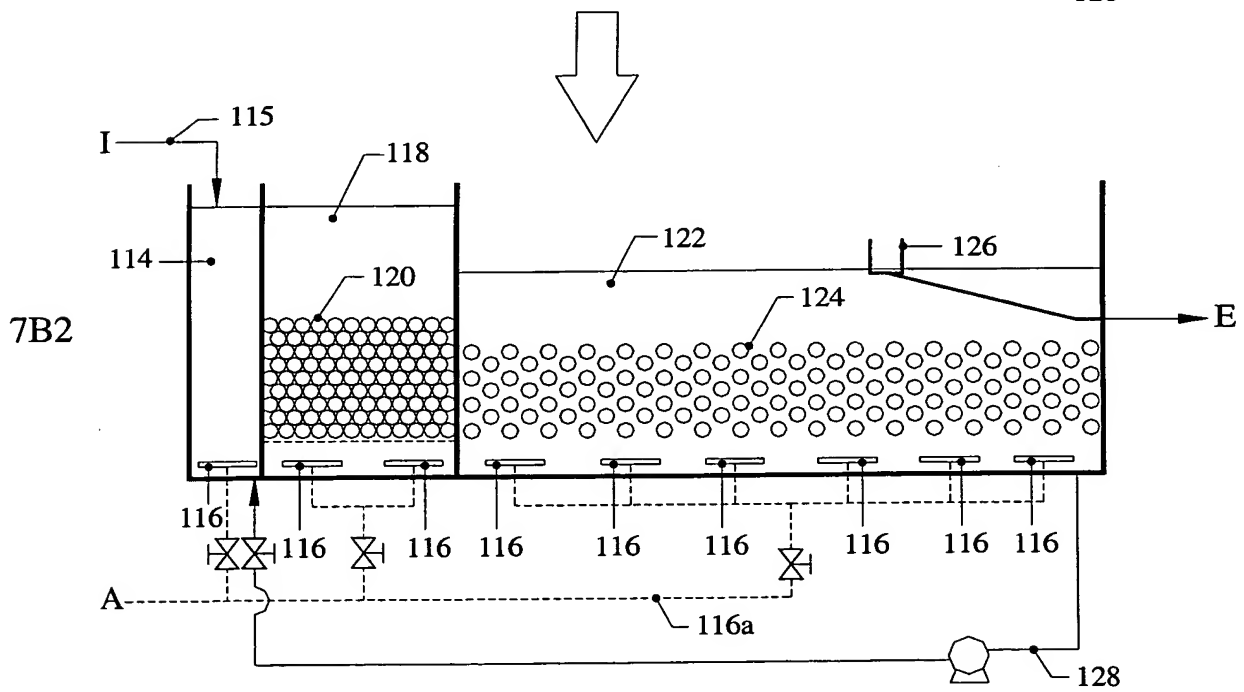
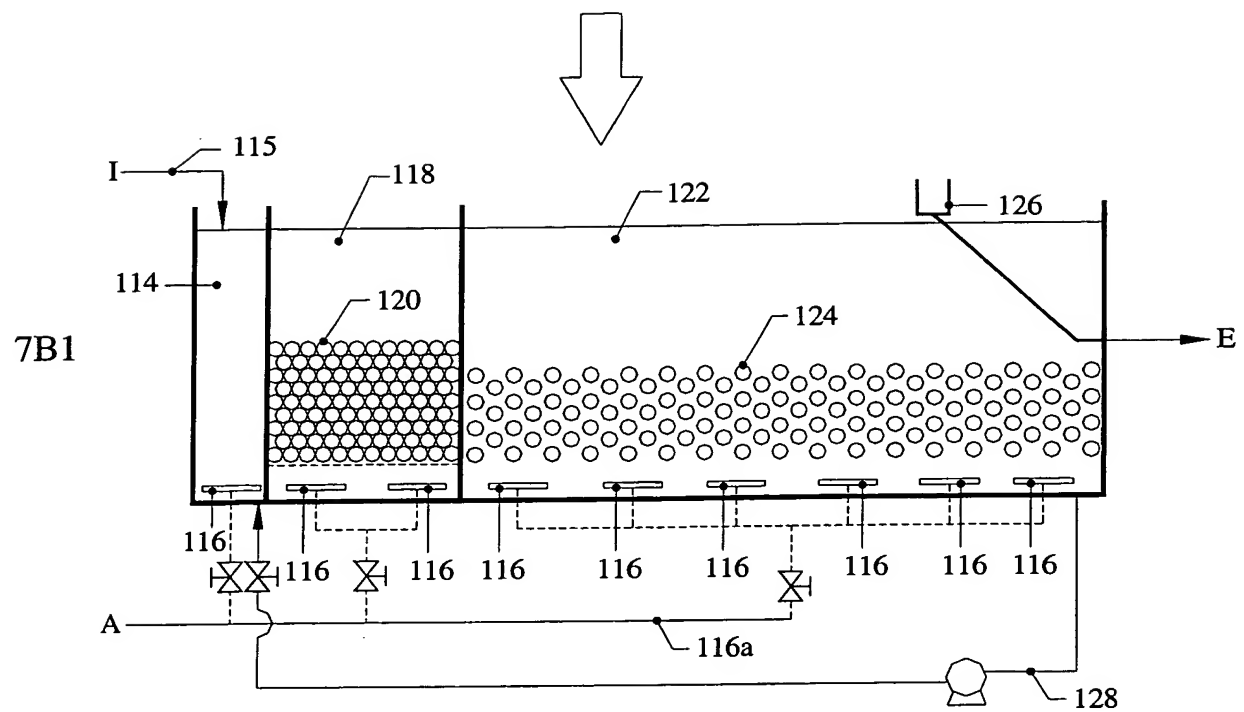


Fig. 7B

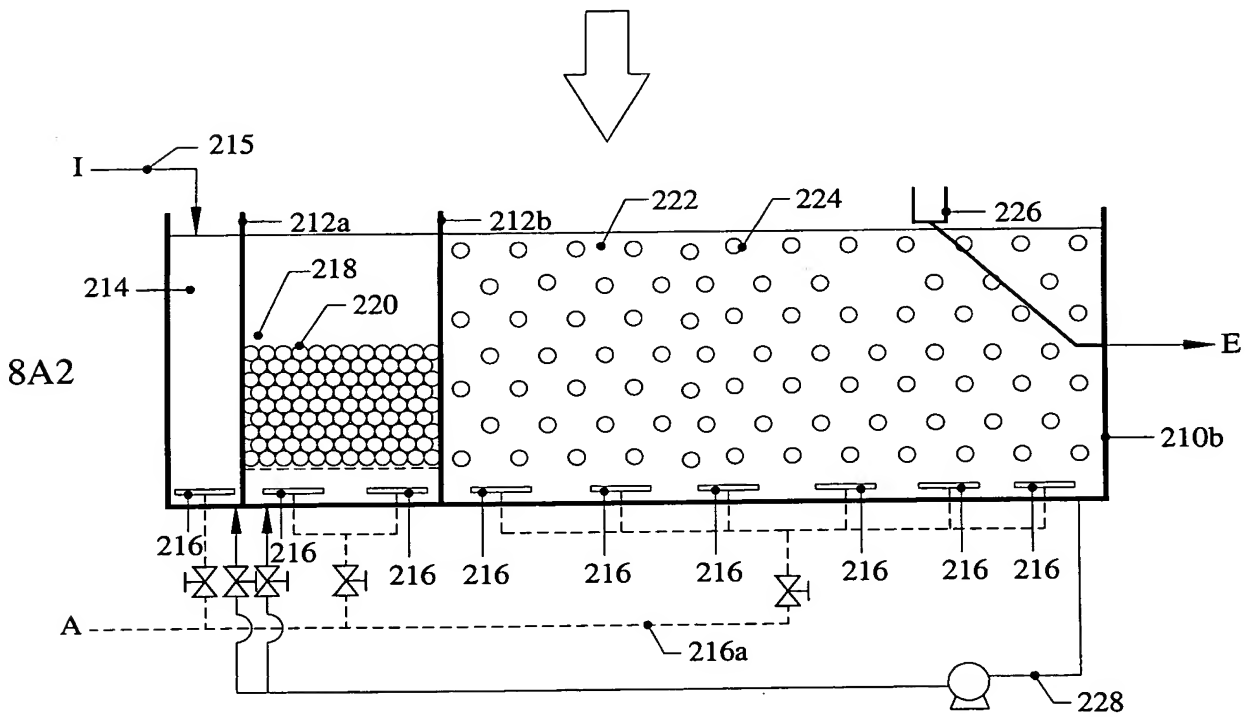
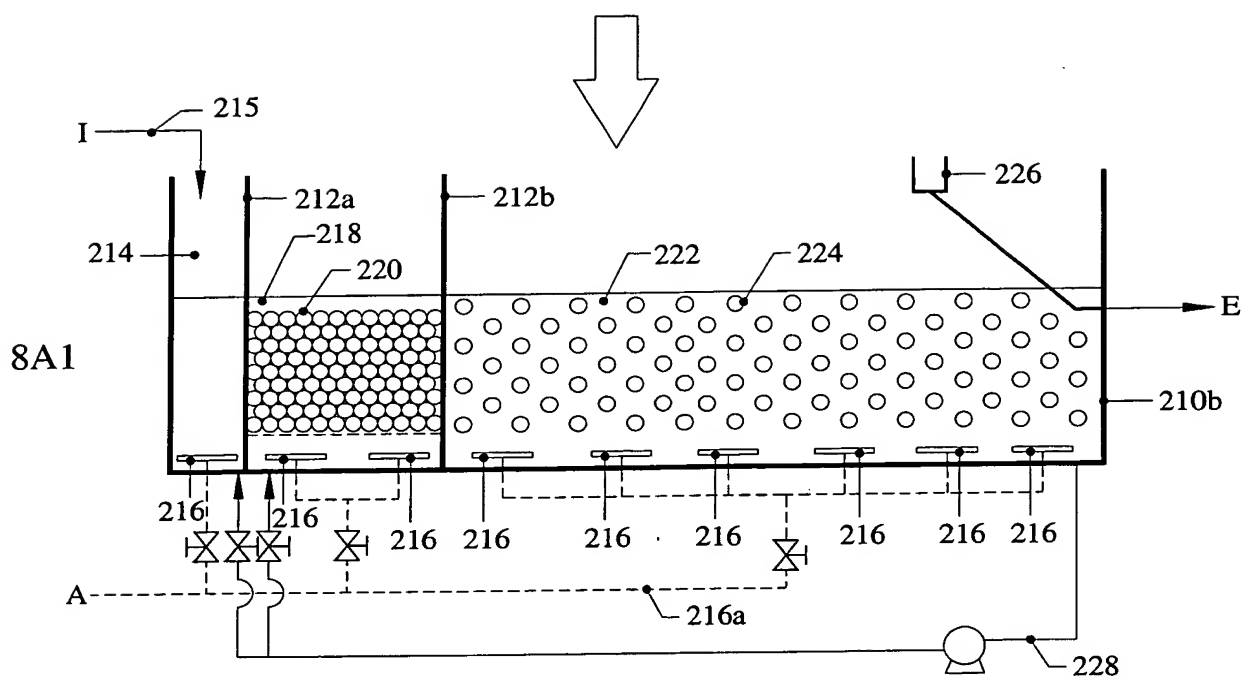


Fig. 8A

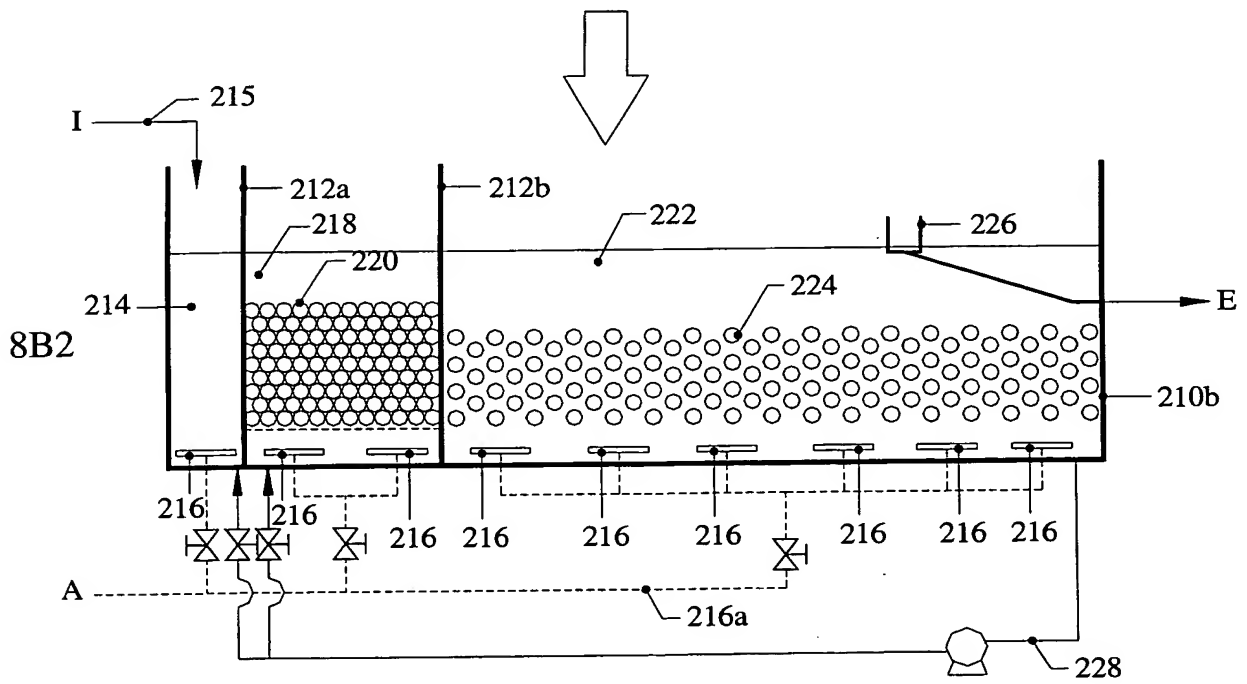
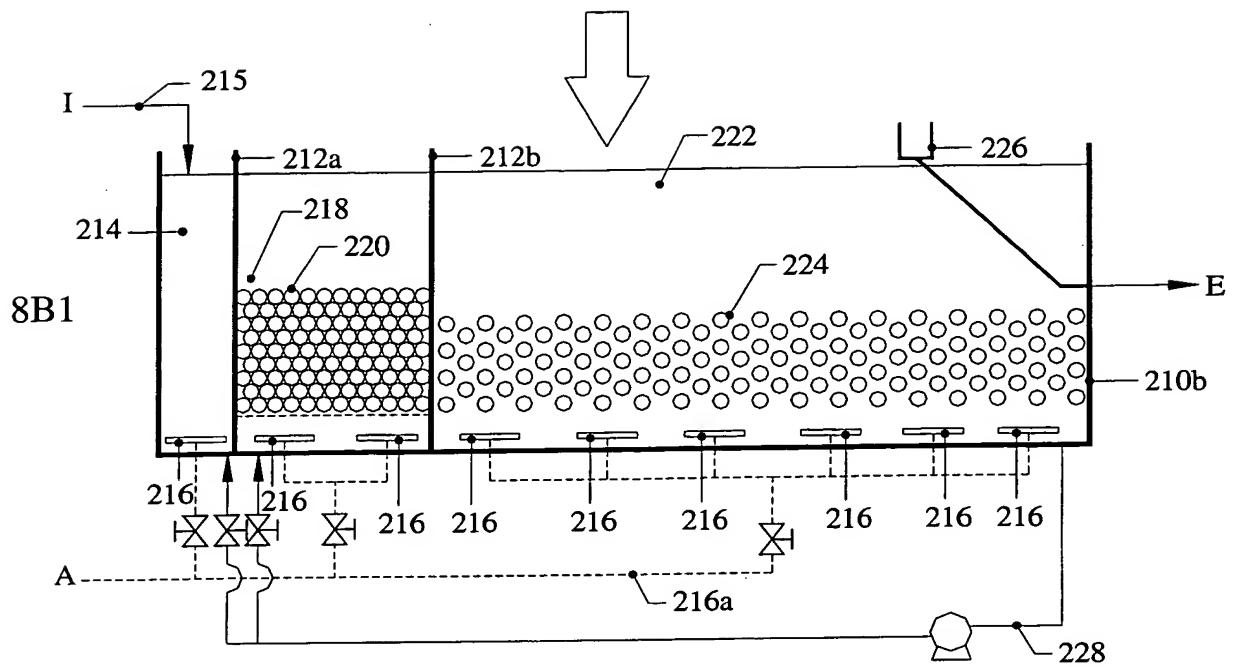


Fig. 8B

| Period | pH   | TCOD | SCOD | TSS | VSS | TKN | NH <sub>4</sub> -N | TCOD:TKN |
|--------|------|------|------|-----|-----|-----|--------------------|----------|
| 1      | 7.81 | 389  | 195  | 220 | 142 | 43  | 26                 | 9.1      |
| 2      | 7.85 | 354  | 176  | 189 | 135 | 41  | 29                 | 8.6      |
| 3      | 7.76 | 363  | 183  | 212 | 132 | 43  | 30                 | 8.4      |
| 4      | 7.70 | 338  | 140  | 227 | 146 | 36  | 26                 | 9.4      |
| 5      | 7.75 | 321  | 156  | 232 | 157 | 37  | 28                 | 8.7      |
| 6      | 7.71 | 332  | 170  | 243 | 169 | 37  | 24                 | 9.0      |
| 7      | 7.75 | 436  | 156  | 256 | 178 | 45  | 31                 | 9.7      |
| 8      | 7.77 | 324  | 148  | 232 | 143 | 39  | 25                 | 8.3      |
| 9      | 7.86 | 364  | 167  | 228 | 155 | 40  | 27                 | 9.1      |
| 10     | 7.92 | 341  | 162  | 213 | 135 | 41  | 27                 | 8.3      |
| 11     | 7.73 | 367  | 226  | 187 | 113 | 42  | 26                 | 8.7      |
| 12     | 8.02 | 379  | 179  | 233 | 156 | 39  | 28                 | 9.7      |
| 13     | 7.93 | 385  | 156  | 227 | 149 | 43  | 29                 | 9.0      |
| 14     | 7.89 | 381  | 174  | 262 | 169 | 41  | 31                 | 9.3      |
| 15     | 7.75 | 406  | 181  | 253 | 173 | 45  | 30                 | 9.0      |
| 16     | 7.68 | 382  | 184  | 237 | 156 | 39  | 27                 | 9.8      |
| 17     | 7.44 | 393  | 172  | 243 | 163 | 38  | 31                 | 10.3     |
| 18     | 7.77 | 411  | 169  | 261 | 177 | 44  | 28                 | 9.3      |
| 19     | 7.63 | 379  | 183  | 224 | 136 | 43  | 32                 | 8.8      |
| 20     | 7.65 | 397  | 167  | 264 | 159 | 42  | 33                 | 9.5      |
| 21     | 7.83 | 387  | 183  | 244 | 152 | 39  | 29                 | 9.9      |
| 22     | 7.56 | 372  | 186  | 226 | 141 | 42  | 31                 | 8.9      |
| 23     | 7.76 | 417  | 178  | 268 | 187 | 41  | 29                 | 10.2     |
| 24     | 7.79 | 395  | 193  | 237 | 144 | 40  | 29                 | 9.9      |
| 25     | 7.82 | 364  | 191  | 206 | 125 | 38  | 27                 | 9.6      |

Fig. 8C

| SBR3  |        |      |      |     |     |     |                    |                    |      |       |
|-------|--------|------|------|-----|-----|-----|--------------------|--------------------|------|-------|
| Phase | Period | TCOD | SCOD | TSS | VSS | TKN | NH <sub>4</sub> -N | NO <sub>3</sub> -N | MLSS | MLVSS |
| I     | 1      | 95   | 80   | 10  | 7   | 8.3 | 4.4                | 10.2               | 3430 | 2400  |
|       | 2      | 93   | 80   | 9   | 6   | 7.9 | 4.4                | 9.6                | 3350 | 2520  |
|       | 3      | 83   | 72   | 8   | 5   | 6.0 | 3.7                | 8.8                | 3560 | 2360  |
|       | 4      | 78   | 68   | 7   | 5   | 6.0 | 3.0                | 7.2                | 3450 | 2480  |
|       | 5      | 73   | 61   | 8   | 5   | 5.5 | 2.1                | 4.3                | 3530 | 2450  |
|       | 6      | 75   | 61   | 7   | 5   | 5.2 | 1.5                | 4.6                | 3420 | 2320  |
|       | 7      | 72   | 58   | 9   | 6   | 4.5 | 1.7                | 4.6                | 3680 | 2540  |
|       | 8      | 70   | 54   | 6   | 4   | 4.2 | 1.2                | 5.4                | 3570 | 2570  |
|       | 9      | 76   | 57   | 7   | 5   | 4.6 | 1.6                | 5.6                | 3250 | 2270  |
| II(a) | 10     | 74   | 64   | 8   | 5   | 5.8 | 2.4                | 6.4                | 2310 | 1550  |
|       | 11     | 96   | 78   | 12  | 8   | 6.2 | 2.8                | 8.0                | 1450 | 1000  |
|       | 12     | 94   | 82   | 8   | 5   | 7.2 | 2.8                | 8.4                | 1420 | 970   |
|       | 13     | 89   | 79   | 7   | 5   | 5.4 | 2.4                | 8.8                | 1350 | 890   |
| II(b) | 14     | 85   | 77   | 6   | 4   | 6.2 | 2.9                | 7.9                | 1290 | 810   |
|       | 15     | 85   | 73   | 8   | 5   | 6.7 | 3.1                | 7.9                | 1330 | 860   |
|       | 16     | 84   | 69   | 9   | 6   | 6.2 | 2.2                | 7.8                | 1360 | 890   |
|       | 17     | 95   | 79   | 11  | 7   | 5.0 | 2.0                | 8.3                | 1410 | 900   |
| II(c) | 18     | 90   | 72   | 13  | 9   | 5.4 | 2.1                | 8.8                | 1350 | 920   |
|       | 19     | 83   | 72   | 7   | 5   | 4.8 | 1.8                | 8.0                | 1370 | 840   |
| II(d) | 20     | 84   | 69   | 8   | 5   | 5.5 | 2.0                | 9.2                | 1400 | 920   |
|       | 21     | 94   | 74   | 12  | 8   | 5.9 | 2.1                | 8.4                | 1380 | 950   |
|       | 22     | 87   | 71   | 9   | 6   | 6.0 | 2.2                | 8.5                | 1340 | 910   |
|       | 23     | 94   | 73   | 12  | 8   | 6.4 | 2.3                | 7.2                | 1370 | 880   |
| II(e) | 24     | 88   | 74   | 9   | 6   | 5.3 | 2.3                | 8.6                | 1420 | 850   |
|       | 25     | 86   | 75   | 7   | 5   | 5.2 | 2.2                | 8.3                | 1280 | 900   |

Fig. 8D

| Conventional SBR |        |      |      |     |     |      |                    |                    |      |        |
|------------------|--------|------|------|-----|-----|------|--------------------|--------------------|------|--------|
| Phase            | Period | TCOD | SCOD | TSS | VSS | TKN  | NH <sub>4</sub> -N | NO <sub>3</sub> -N | MLSS | MLVSS  |
| I                | 1      | 94   | 80   | 9   | 6   | 8.3  | 4.7                | 10.0               | 3550 | 2480   |
|                  | 2      | 95   | 82   | 11  | 7   | 7.8  | 4.6                | 9.9                | 3650 | 2445.5 |
|                  | 3      | 88   | 78   | 7   | 5   | 8.6  | 4.8                | 9.9                | 3620 | 2470   |
|                  | 4      | 90   | 79   | 6   | 4   | 8.3  | 5.3                | 9.6                | 3550 | 2670   |
|                  | 5      | 95   | 77   | 9   | 6   | 9.0  | 5.3                | 9.9                | 3670 | 2610   |
|                  | 6      | 84   | 78   | 7   | 5   | 8.7  | 5.2                | 10.1               | 3480 | 2540   |
|                  | 7      | 91   | 76   | 10  | 7   | 9.1  | 5.8                | 10.0               | 3890 | 2740   |
|                  | 8      | 90   | 78   | 8   | 5   | 9.3  | 6.1                | 9.6                | 3720 | 2610   |
|                  | 9      | 85   | 76   | 6   | 4   | 8.5  | 4.7                | 9.4                | 3450 | 2450   |
|                  | 10     | 102  | 87   | 9   | 6   | 10.8 | 7.3                | 8.0                | 2200 | 1350   |
|                  | 11     | 125  | 103  | 12  | 8   | 20.2 | 16.7               | 4.4                | 1520 | 990    |
|                  | 12     | 127  | 107  | 11  | 7   | 22.5 | 18.7               | 4.5                | 1550 | 1020   |
|                  | 13     | 123  | 109  | 7   | 5   | 23.8 | 20.2               | 4.3                | 1480 | 960    |
| II(a)            |        |      |      |     |     |      |                    |                    |      |        |

Fig. 8E

| Period | pH   | TCOD | SCOD | TSS | VSS | TKN | NH <sub>4</sub> -N | TP   | PO <sub>4</sub> -P | TCOD:TKN |
|--------|------|------|------|-----|-----|-----|--------------------|------|--------------------|----------|
| 1      | 6.84 | 478  | 258  | 220 | 181 | 39  | 25                 | 11.1 | 7.8                | 12.3     |
| 2      | 6.80 | 454  | 239  | 223 | 174 | 42  | 27                 | 11.6 | 8.2                | 10.8     |
| 3      | 7.35 | 465  | 246  | 219 | 171 | 40  | 26                 | 10.9 | 8.5                | 11.6     |
| 4      | 7.76 | 442  | 203  | 232 | 185 | 38  | 28                 | 10.7 | 8.3                | 11.6     |
| 5      | 7.70 | 435  | 219  | 231 | 196 | 37  | 26                 | 11.5 | 6.7                | 11.8     |
| 6      | 6.94 | 432  | 233  | 243 | 208 | 39  | 24                 | 10.0 | 7.6                | 11.1     |
| 7      | 7.20 | 452  | 219  | 256 | 217 | 43  | 29                 | 10.8 | 7.2                | 10.5     |
| 8      | 7.08 | 434  | 211  | 232 | 182 | 37  | 23                 | 10.7 | 6.9                | 11.7     |
| 9      | 7.05 | 446  | 189  | 228 | 194 | 42  | 25                 | 11.4 | 7.7                | 10.6     |
| 10     | 7.05 | 442  | 225  | 213 | 174 | 43  | 26                 | 9.7  | 7.1                | 10.3     |
| 11     | 7.15 | 467  | 289  | 194 | 152 | 42  | 27                 | 10.2 | 7.9                | 11.1     |
| 12     | 7.11 | 482  | 242  | 231 | 195 | 45  | 28                 | 10.5 | 7.6                | 10.7     |
| 13     | 7.30 | 487  | 219  | 237 | 188 | 44  | 29                 | 10.2 | 7.4                | 11.1     |
| 14     | 7.45 | 481  | 237  | 267 | 208 | 46  | 31                 | 11.3 | 7.3                | 10.5     |
| 15     | 7.15 | 432  | 244  | 256 | 212 | 41  | 37                 | 11.0 | 6.9                | 10.5     |
| 16     | 7.28 | 478  | 247  | 273 | 195 | 39  | 25                 | 11.3 | 8.0                | 12.3     |
| 17     | 7.34 | 425  | 235  | 245 | 202 | 36  | 31                 | 9.7  | 7.5                | 11.8     |
| 18     | 7.32 | 454  | 232  | 276 | 216 | 44  | 25                 | 10.3 | 7.6                | 10.3     |

Fig. 8F

| SBR3   |        |      |      |     |     |     |                    |                    |                    |     |      |       |
|--------|--------|------|------|-----|-----|-----|--------------------|--------------------|--------------------|-----|------|-------|
| Phase  | Period | TCOD | SCOD | TSS | VSS | TKN | NH <sub>4</sub> -N | NO <sub>3</sub> -N | PO <sub>4</sub> -P | TP  | MLSS | MLVSS |
| I      | 1      | 69   | 48   | 17  | 10  | 3.6 | 1.6                | 4.7                | 7.0                | 7.7 | 3575 | 2400  |
|        | 2      | 67   | 47   | 19  | 13  | 2.1 | 1.3                | 5.2                | 6.3                | 7.2 | 3450 | 2450  |
|        | 3      | 61   | 43   | 18  | 12  | 2.3 | 0.6                | 4.8                | 6.0                | 6.5 | 3360 | 2350  |
|        | 4      | 54   | 37   | 21  | 14  | 1.5 | 0.6                | 4.4                | 5.9                | 6.9 | 3440 | 2440  |
|        | 5      | 46   | 32   | 20  | 15  | 1.9 | 1.1                | 4.2                | 5.8                | 6.7 | 3350 | 2510  |
|        | 6      | 42   | 30   | 15  | 11  | 1.6 | 0.8                | 4.0                | 5.6                | 6.4 | 3380 | 2480  |
| II     | 7      | 45   | 32   | 14  | 10  | 2.3 | 1.5                | 4.6                | 5.5                | 6.3 | 2530 | 1780  |
|        | 8      | 51   | 36   | 16  | 11  | 3.6 | 2.0                | 5.4                | 5.0                | 6.0 | 1800 | 1290  |
|        | 9      | 57   | 38   | 21  | 17  | 3.0 | 1.6                | 5.6                | 4.5                | 5.2 | 1840 | 1270  |
|        | 10     | 54   | 36   | 17  | 11  | 3.2 | 1.6                | 5.0                | 4.4                | 5.3 | 1810 | 1350  |
| III(a) | 11     | 52   | 38   | 19  | 12  | 3.5 | 2.0                | 5.6                | 2.8                | 3.7 | 1750 | 1300  |
|        | 12     | 46   | 32   | 16  | 12  | 3.4 | 1.8                | 5.8                | 1.6                | 2.4 | 1820 | 1370  |
|        | 13     | 53   | 38   | 19  | 13  | 3.1 | 1.5                | 3.4                | 1.0                | 2.0 | 1850 | 1390  |
|        | 14     | 54   | 37   | 19  | 12  | 3.2 | 1.8                | 5.7                | 1.7                | 2.4 | 1890 | 1280  |
| III(b) | 15     | 53   | 36   | 22  | 15  | 3.4 | 2.1                | 5.7                | 1.8                | 2.3 | 1830 | 1360  |
| III(c) | 16     | 50   | 35   | 21  | 14  | 3.6 | 2.2                | 5.0                | 1.8                | 2.5 | 1660 | 1200  |
| III(d) | 17     | 56   | 39   | 13  | 12  | 3.5 | 2.0                | 4.9                | 1.6                | 2.9 | 1810 | 1300  |
| III(e) | 18     | 49   | 33   | 21  | 14  | 3.7 | 2.1                | 5.4                | 1.8                | 2.8 | 1750 | 1320  |

Fig. 8G



| Conventional SBR |        |      |      |     |     |      |                    |                    |                    |     |      |       |
|------------------|--------|------|------|-----|-----|------|--------------------|--------------------|--------------------|-----|------|-------|
| Phase            | Period | TCOD | SCOD | TSS | VSS | TKN  | NH <sub>4</sub> -N | NO <sub>3</sub> -N | PO <sub>4</sub> -P | TP  | MLSS | MLVSS |
| I                | 1      | 87   | 64   | 16  | 12  | 3.8  | 1.7                | 5.0                | 6.7                | 7.5 | 3530 | 2450  |
|                  | 2      | 91   | 66   | 18  | 14  | 4.0  | 1.6                | 5.5                | 6.6                | 7.6 | 3510 | 2440  |
|                  | 3      | 90   | 67   | 17  | 11  | 4.2  | 1.5                | 5.8                | 5.5                | 6.3 | 3400 | 2670  |
|                  | 4      | 97   | 65   | 20  | 13  | 3.9  | 1.5                | 5.4                | 5.1                | 6.2 | 3350 | 2340  |
|                  | 5      | 95   | 61   | 21  | 16  | 4.2  | 1.7                | 5.5                | 5.7                | 6.7 | 3540 | 2670  |
|                  | 6      | 80   | 60   | 16  | 10  | 4.0  | 1.7                | 5.5                | 5.5                | 6.5 | 3490 | 2640  |
| II               | 7      | 79   | 61   | 13  | 9   | 11.5 | 8.8                | 3.7                | 5.7                | 6.1 | 2470 | 1750  |
|                  | 8      | 90   | 65   | 17  | 13  | 23.5 | 21.1               | 1.3                | 3.4                | 4.5 | 1720 | 1210  |
|                  | 9      | 92   | 62   | 20  | 15  | 25.9 | 23.5               | 0.8                | 2.6                | 3.7 | 1780 | 1310  |
|                  | 10     | 84   | 61   | 16  | 9   | 24.9 | 23.5               | 1.3                | 1.9                | 3.0 | 1750 | 1350  |
| III(a)           | 11     | 89   | 63   | 17  | 15  | 25.2 | 22.5               | 4.4                | 1.6                | 3.1 | 1820 | 1290  |
|                  | 12     | 93   | 65   | 18  | 13  | 24.1 | 21.3               | 4.5                | 1.8                | 3.2 | 1750 | 1310  |
|                  | 13     | 87   | 59   | 18  | 12  | 24.2 | 20.8               | 3.1                | 1.1                | 2.9 | 1780 | 1360  |

Fig. 8H

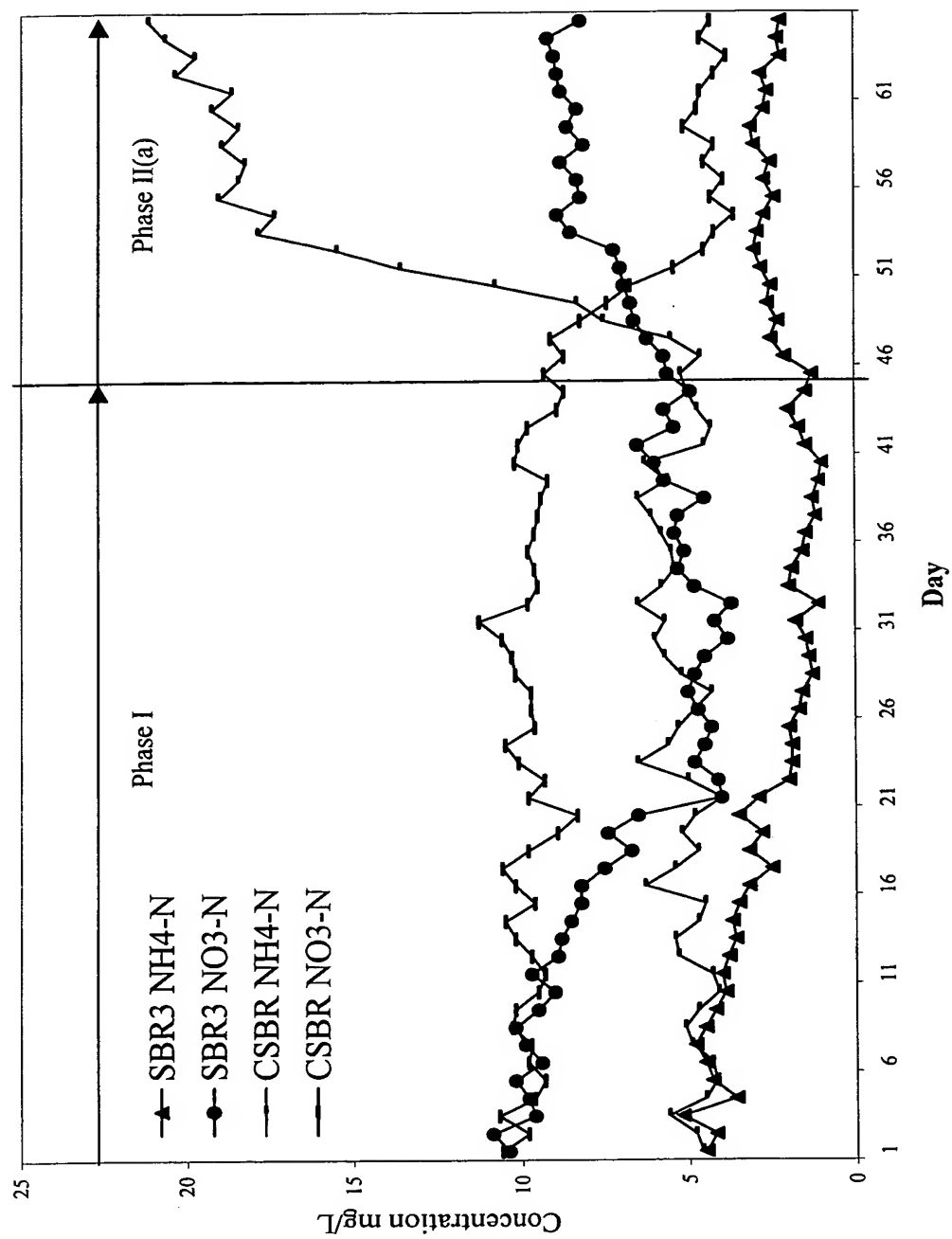


Fig. 8I

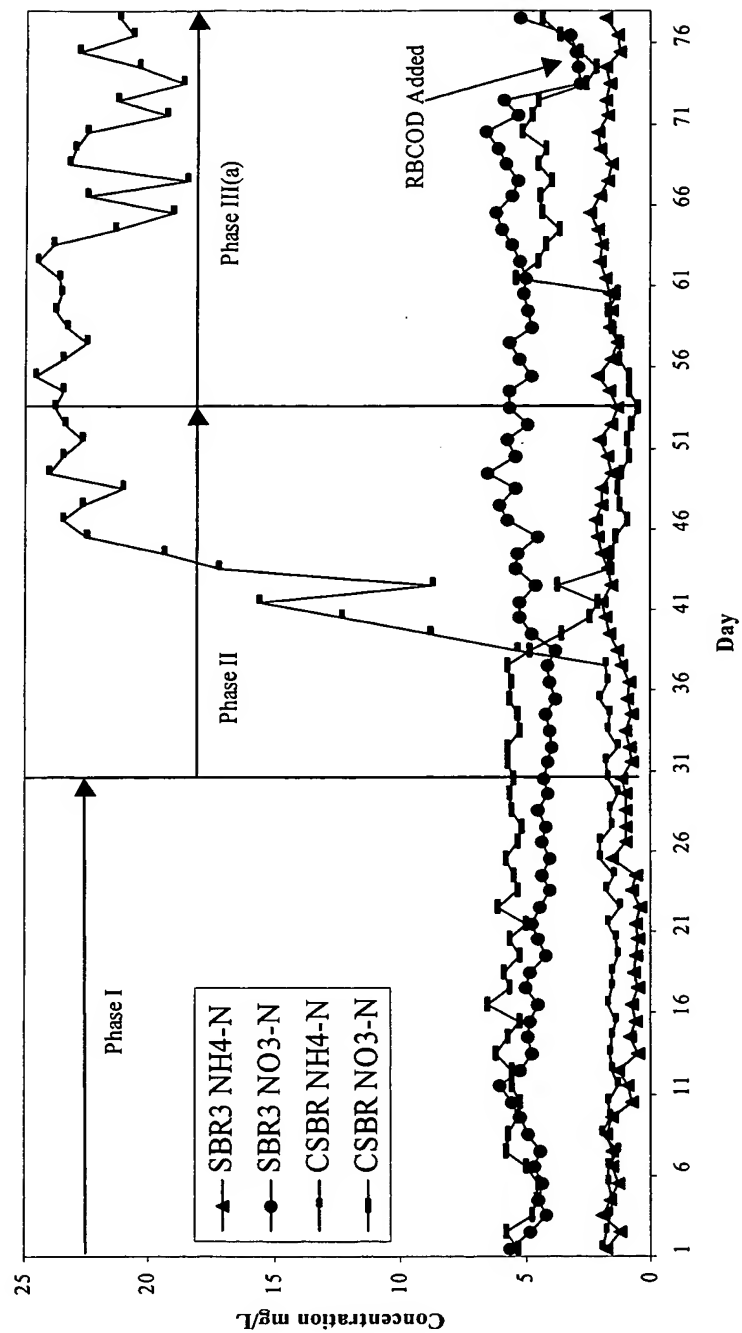


Fig. 8J

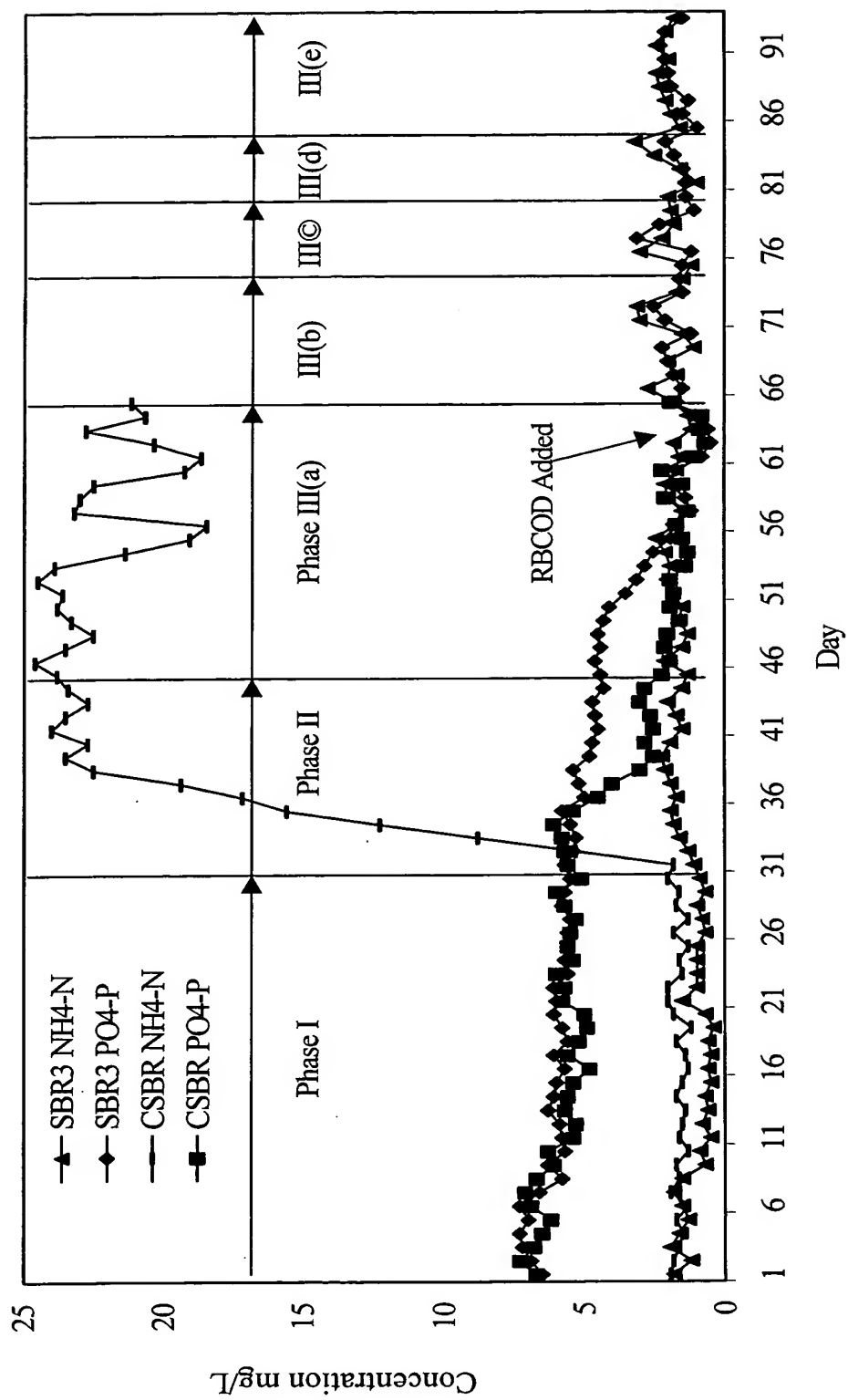


Fig. 8K

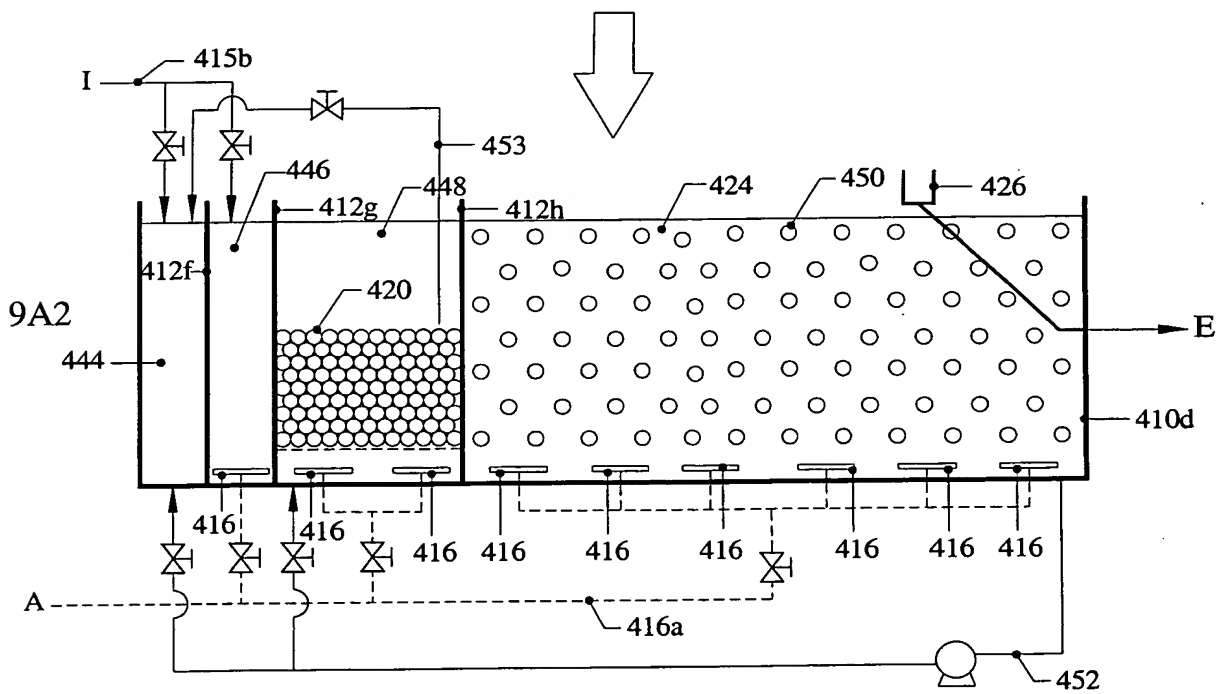
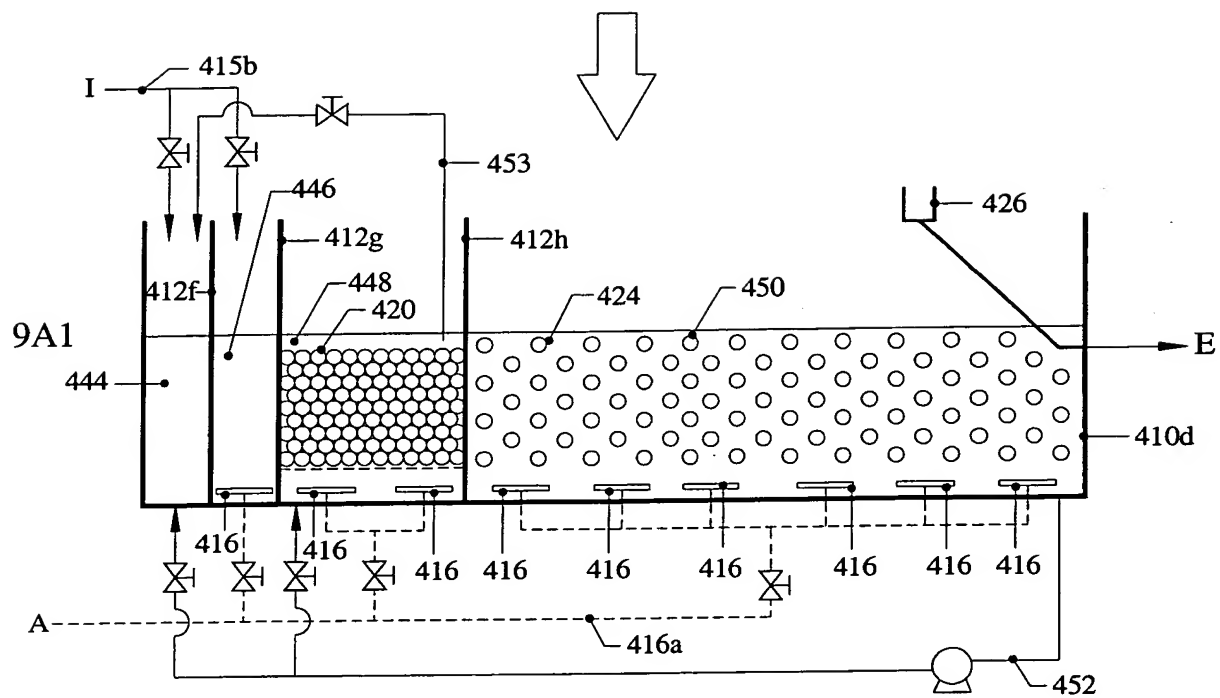


Fig. 9A



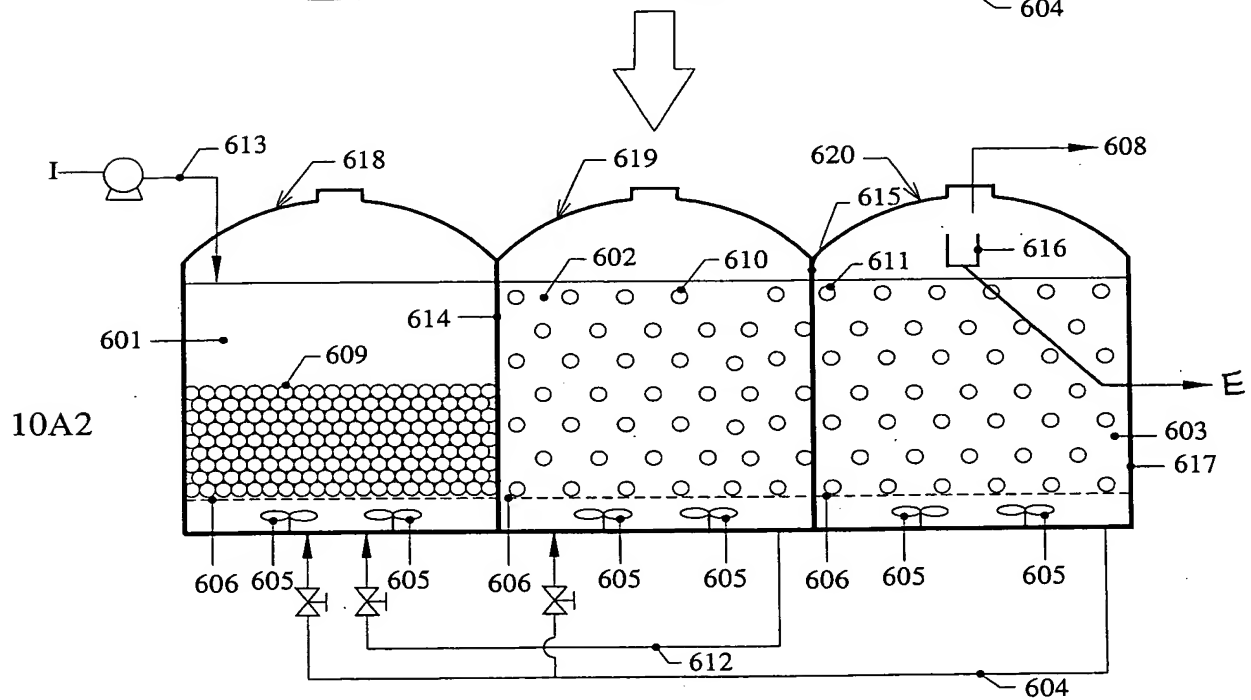
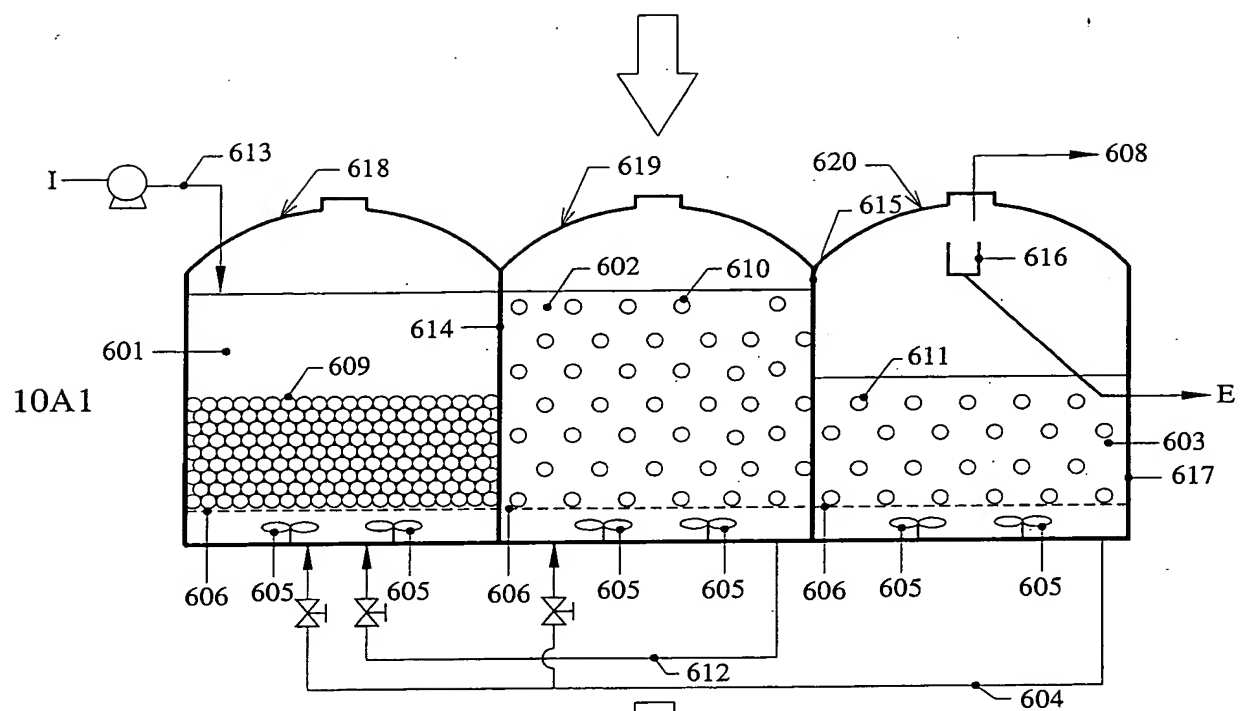


Fig. 10A

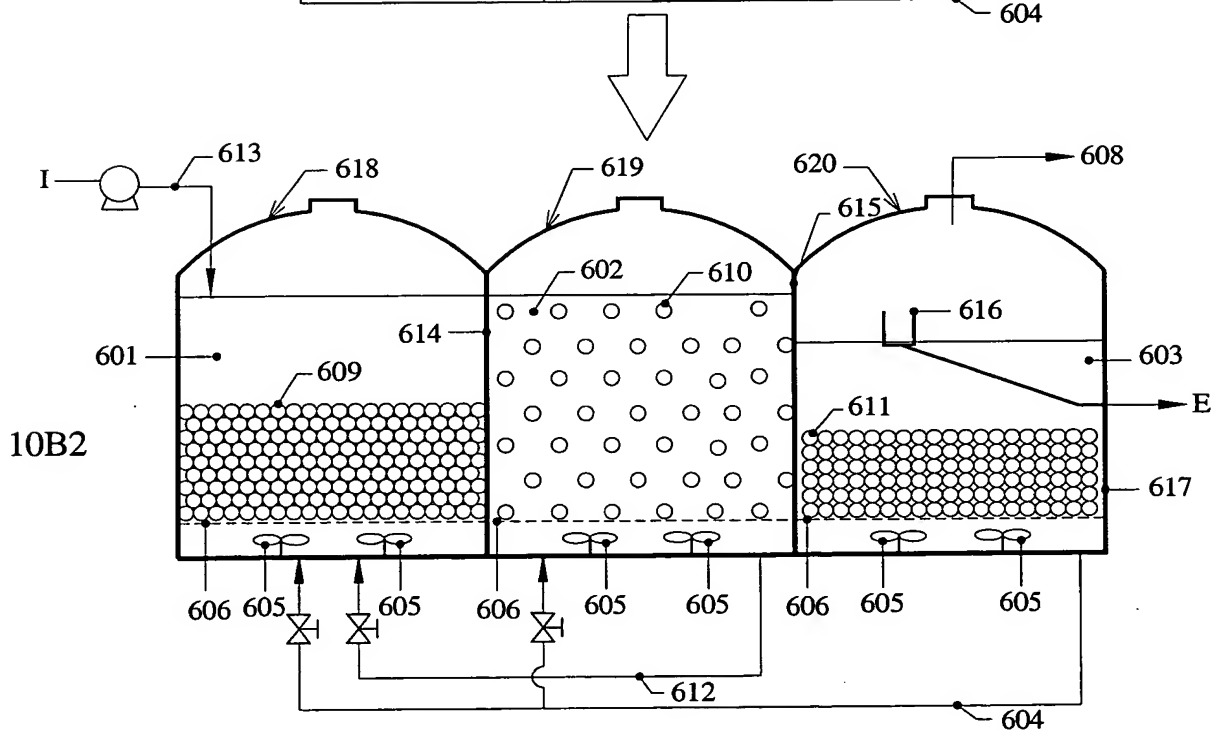
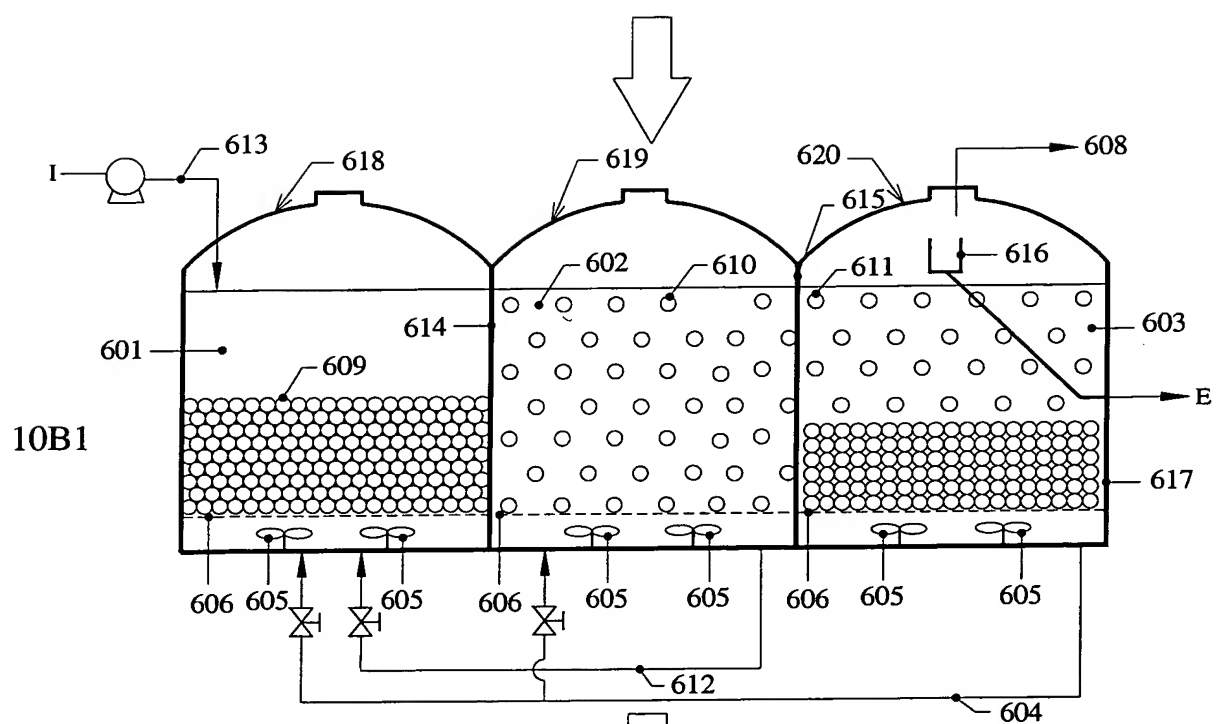


Fig. 10B